Statewide Standard Treatment Protocol

Basic Life Support Pharmacology Manual

Effective: February 1, 2001

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ANAPHYLACTIC PRECAUTIONS

Anaphylaxis:

A generalized reaction occurring with dramatic suddenness (usually within a few minutes) after a patient has been exposed to some foreign material.

Cause:

Any drug has the potential to precipitate anaphylaxis. Generally those administered intravenously or parenterally are more likely to result in life-threatening or fatal anaphylaxis than those ingested or applied to the skin or mucous membranes.

Clinical features:

The patient with anaphylaxis may develop laryngeal edema and bronchospasm which cause respiratory distress and anoxia. The sooner the symptoms develop after the initiating stimulus the more intense the reaction. The symptoms include the following: generalized flush, urticaria, pruritus, anxiety, dyspnea, wheezing, choking, orthopnea, vomiting, cyanosis, paresthesias, shock, and loss of consciousness. Anoxia, shock, and death may occur within 5-10 minutes.

Prevention:

A. Know the patient's allergy history by asking the patient or family before giving a new medication.

B. Know the precautions listed for each drug.

Treatment:

A. Stop the infusion of the medication but keep the IV line open.

B. Maintain the airway.

C. Be prepared to treat anaphylactic shock according to *The Statewide Standard Treatment Protocol*

D. Call the medical command physician.

E. After the emergency episode is over, calm the patient. Be certainthat the patient has been informed of the allergy and that the allergy is documented on the report form. Verbally report the episode on arrival to hospital personnel and complete a variance report.

INTRAVENOUS INFILTRATION PRECAUTIONS

Before transporting any patient with an intravenous (IV) access catheter with a solution running, the EMT-B must check the IV site for patency and signs of infiltration and/or phlebitis. If infiltration occurs, stop the IV fluid do not remove the IV device. Contact the medical control physician immediately for orders.

Factors that increase the risk of infiltration:

- Sclerotic vascular disease
- Venous obstruction in the arm (check for edema)
- Radiation treatment near the site of injection
- High drug concentration
- Limited choice for vein selection
- Multiple venipunctures
- Elderly or debilitated
- Superior vena cava syndrome
- Specific characteristics of the drug
- Uncooperative/irrational individual

Symptoms of an infiltration:

If pain, burning or stinging occurs at the injection site, evaluate the site for swelling, redness, and inflammation. The presence of a blood return or absence of edema does not negate the possibility of the infusate being spread outside the vein to surrounding tissue. Drug leakage may occur at the site of a previous vessel injury while the needle/catheter is still in the vein.

ALBUTEROL SULFATE (PROVENTIL, VENTOLIN)

Pharmacology:

- Synthetic sympathomimetic amine (a type of stimulant)
- Stimulates beta-2 adrenergic receptors of the bronchioles
- Little effect on blood pressure
- Little cardiac effects
- Main effect is bronchodilation
- It may cause some vasodilation as evidenced by headache or flushing

Pharmacokinetics:

- Bronchodilation begins within 5 to 15 minutes after inhalation
- Peak effect occurs in 30 minutes to 2 hours
- Duration of action is usually 3-4 hours

Indications:

- To reverse bronchospasm (wheezing)

Adverse Effects:

- Tachycardia, palpitations, peripheral vasodilation, tremor, and nervousness may be seen infrequently

Precautions:

- Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity
- If respirations worsen, discontinue use
- Should be used with caution in patients with hyperthyroidism or coronary artery disease

Contraindications:

- Known hypersensitivity

Dosage:

- **Adults:** 2.5 - 5.0 mg by nebulized aerosol or 2 puffs by metered dose inhaler
- **Children:**
  - Age 8 or older - 2.5 - 5.0 mg by nebulized aerosol or 2 puffs by metered dose inhaler
  - Ages 2 to 8 - 2.5 mg by nebulized aerosol or 2 puffs by metered dose inhaler

EPINEPHRINE

Pharmacology:

- The administration of epinephrine causes increases in
  (1) systemic vascular resistance
  (2) systemic arterial pressure
  (3) heart rate
  (4) contractile state
  (5) myocardial oxygen requirement
  (6) cardiac automaticity

Pharmacokinetics:

- Intravenously administered epinephrine has an extremely rapid onset of action
- Is rapidly inactivated by the liver.
- Subcutaneous administration of epinephrine results in slower absorption due to local vasoconstriction.
- Local massage will hasten absorption

Indications:

- Epinephrine selectively improves regional blood flow to the heart and brain
- The primary drug for the treatment of cardiac arrest
- Intravenous epinephrine may also be given to patients suffering true anaphylactic shock with impending cardiac arrest
- Patients suffering from severe allergic reactions may be given subcutaneous epinephrine
- Intravenous epinephrine may be an extremely dangerous drug when given intravenously to a person with normal circulatory status
- Its use should be reserved for cardiac arrest or for impending cardiac arrest due to anaphylactic shock

Precautions:

- Do not mix with sodium bicarbonate as this inactivates epinephrine
- Epinephrine causes a dramatic increase in myocardial oxygen consumption
- Its use in the setting of an acute MI should be restricted to cardiac arrest

Dosage:

- **Anaphylactic shock:**
  Adults
  0.5 mg(0.5 ml of 1:1000 solution) subcutaneously (EpiPen)
  Children
  0.01 mg/kg(maximum 0.3 mg) subcutaneously (EpiPen)

NITROGLYCERINE

Pharmacology:
- Vasodilator-effect on veins more than arteries

Pharmacokinetics Nitropaste:
- Absorbed through the skin
- For antianginal effects the onset is 30 minutes, while duration is 3 hours
- For vasodilation the onset is within 1 hour and duration is 3 to 6 hours.
- Half-life is 1-4 minutes.

Pharmacokinetics Nitrotabs and Nitro Spray:
- Absorbed through oral mucosa
- Antianginal and vasodilation effects within minutes
- Duration of action is less than 5 minutes

Indications:
- For treatment of angina
- Congestive heart failure
- Not to be used for asymptomatic hypertension

Adverse Effects:
- Dose-related
- Headache, hypotension, and dizziness

Precautions:
- May cause hypotension

Contraindications:
- Known hypersensitivity

Dosage:
- One-half to one inch every 6-8 hours
- 0.4 mg sublingual every 5 minutes
- DO NOT USE IN CHILDREN

How supplied:
- Nitrol ointment 2%
- Tablets 0.4 mg

OXYGEN

Pharmacology:

- Elevates oxygen tension in the blood
- Increases oxygen content of the blood
- Improves tissue oxygenation

Pharmacokinetics:

- Changing the percentage of inspired oxygen will result in blood and tissue equilibration within 5 to 20 minutes.

Indications:

- Acute chest pain
- Suspected hypoxemia of any etiology
- Cardiopulmonary arrest
- Trauma

Precautions:

- The main precaution is not administering enough oxygen to patients who need it. Never withhold oxygen from those in obvious need.
- Oxygen should be given with caution to patients with emphysema